

CLAIMS

What is claimed is:

1. A method of filtering entrained debris from the refrigerant of an automotive air conditioning system, said system comprising a compressor, said compressor
5 comprising at least one compressor inlet suction port, said suction port connected to a suction hose assembly, the method comprising the steps of:

(a) disconnecting the suction hose assembly from the compressor inlet suction port;

(b) positioning a filter plate assembly between the compressor inlet
10 suction port and the suction hose assembly, said filter plate assembly comprising a filter installed in a filter plate;

(c) connecting the filter plate to the compressor inlet suction port; and

(d) connecting the filter plate to the suction hose.

2. The method of Claim 1, said filter plate comprising a removable filter plate.

15 3. The method of Claim 1, said filter comprising a replaceable filter.

4. The method of Claim 1, said filter not disposed within said suction hose assembly.

5. The method of Claim 1, said filter not disposed within said compressor inlet suction port.

20 6. The method of Claim 1, said filter plate comprising an extension flange, said filter completely disposed within said filter plate, including said extension flange.

7. The method of Claim 1, said compressor inlet suction port having a suction port inner diameter, and said filter having a filter outer diameter, and

wherein, said filter outer diameter is greater than said suction port inner diameter.

5 8. The method of Claim 1, said suction hose assembly having a suction hose inner diameter, and said filter having a filter outer diameter, and

wherein, said filter outer diameter is greater than said suction hose inner diameter.

9. The method of Claim 1, said compressor inlet suction port having a suction port inner diameter, said suction hose assembly having a suction hose inner diameter, said
10 filter having a filter outer diameter,

wherein said filter outer diameter does not equal either said suction port inner diameter or said suction hose inner diameter.

10. A method of filtering entrained debris from the refrigerant of an automotive
15 air conditioning system, said system comprising a compressor, said compressor comprising at least one compressor inlet suction port, said suction port connected to a suction hose assembly, the method comprising the steps of:

(a) providing a filter plate comprising:

a main body defining a first passage, a first side, and a second
20 side, the first passage adapted to allow a refrigerant flow between the first and the second side; and

a filter positioned across the first passage;

(b) disconnecting the suction hose assembly from the compressor inlet
suction port;

(c) connecting the first side of the filter plate to the compressor inlet
5 suction port such that the first passage is in fluid communication with the compressor
suction port; and

(d) connecting the second side of the filter plate to the suction hose
assembly such that the first passage is in fluid communication with the suction hose
assembly, wherein the compressor suction port is in fluid communication with the
10 suction hose assembly through the first passage and the filter positioned across the
first passage.

11. The method of claim 10, wherein, the compressor inlet suction port comprises a
compressor inlet port connector for attachment of the filter plate to a compressor
inlet port, said compressor inlet port connector having a compressor inlet port
15 connector internal diameter,

wherein, the first passage comprises a filter receiving section for receiving the
filter, the filter receiving section having a filter receiving section diameter, said filter
receiving section further comprising a filter receiving area for receiving a filter, and

wherein, the filter receiving section diameter is greater than the inlet port
20 connector internal diameter.

12. The method of claim 11, wherein the filter comprises a mesh portion and an engagement portion, said engagement portion receiving and retaining said mesh portion, said engagement portion defining a filter outer diameter, said filter positioned across said filter receiving section of said first passage, and said

5 engagement portion received and retained within said filter receiving area, and wherein, the filter outer diameter is greater than the inlet port connector internal diameter.

13. The method of claim 12, wherein, said first passage further comprises an outflow section, said outflow section having a outflow section diameter, wherein said receiving section diameter is greater than said outlet flow section diameter, and

10 wherein, the filter outer diameter is greater than the outlet flow section diameter.

14. The method of claim 10, wherein said compressor having at least one compressor outlet discharge port, and said discharge port connected to a discharge hose assembly, and

15 wherein the main body of the filter plate further defines a second passage, said second passage adapted to allow a refrigerant flow between the first and the second side,

the method further comprising the steps of:

20 disconnecting the discharge hose assembly from the compressor outlet discharge port;

connecting the first side of the filter plate to the compressor outlet discharge port such that the second passage is in fluid communication with the compressor outlet discharge port;

connecting the second side of the filter plate to the discharge hose assembly
5 such that the first passage is in fluid communication with the discharge hose assembly,

wherein the compressor outlet discharge port is in fluid communication with the discharge hose assembly through the second passage.

15 A method of renewing a filter in an automotive air conditioning system, said
10 system comprising:

a compressor having a compressor inlet suction port

a suction hose assembly; and

a filter plate comprising:

a main body defining a first passage, a first side, and a second
15 side, the first passage adapted to allow a refrigerant flow between the first and the second side; and

a filter positioned across the first passage;

wherein the at least one compressor inlet suction port is connected to the first side of the filter plate such that the first passage is in fluid communication with the
20 compressor suction port, and

wherein the suction hose assembly is connected to the second side of the filter plate, such that the first passage is in fluid communication with the suction hose assembly,

the method comprising the steps of:

5 (a) disconnecting the suction hose assembly from the second side of the filter plate;

(b) disconnecting the compressor suction port assembly from the first side of the filter plate;

(c) removing the filter plate;

10 (d) renewing the filter of the filter plate

(e) connecting the first side of the filter plate to the compressor inlet suction port such that the first passage is in fluid communication with the compressor suction port;

(f) connecting the second side of the filter plate to the suction hose
15 assembly such that the first passage is in fluid communication with the suction hose assembly,

wherein the compressor suction port is in fluid communication with the suction hose assembly through the first passage and the filter positioned across the first passage.

20 16. The method of claim 15, wherein, the step of renewing the filter of the filter plate comprises cleaning the filter of the filter plate.

17. The method of claim 15, wherein, the step of renewing the filter of the filter plate comprises removing the filter from the filter plate and installing a second filter in the filter plate.

18. A method of filtering entrained debris from the refrigerant of an automotive air conditioning system, said system comprising a compressor, said compressor comprising a compressor inlet suction port, said suction port connected to a suction hose assembly, the method comprising the steps of:

(a) providing an inlet port filter plate, the filter plate comprising:
a main body comprising:

a first side, said first side comprising a first connection opening, said first connection opening adapted to receive a compressor inlet port connector for attachment of the filter plate to a compressor inlet port, said compressor inlet port connector having a compressor inlet port connector internal diameter;

a second side, the second side comprising a second connection opening, said second connection opening adapted to receive a suction hose assembly connector for attachment of the filter plate to the suction hose assembly, said suction hose assembly connector having an suction hose assembly connector internal diameter;

a first passage, said first passage adapted to allow a refrigerant flow between said second connection opening and said first connection

opening, said first passage comprising a filter receiving section and a
outflow section, said filter receiving section having at least one filter
receiving section diameter and said outflow section having a outflow
section diameter, wherein each said at least one receiving section
5 diameter is greater than said outlet flow section diameter, and wherein
said filter receiving section further comprises a filter receiving area for
receiving a filter; and

a filter, said filter comprising a mesh portion and an engagement portion,
said engagement portion receiving and retaining said mesh portion, said
10 engagement portion defining a filter outer diameter and said mesh portion defining a
filter inner diameter, said filter positioned across said filter receiving section of said
first passage, and said engagement portion received and retained within said filter
receiving area,

wherein, said outlet flow section diameter is at least as great as said
15 compressor inlet port connector internal diameter,

wherein, said filter outer diameter is greater than said outlet flow section
diameter,

wherein said filter outer diameter is greater than said suction hose assembly
connector internal diameter, and

20 wherein, said filter inner diameter is maximized such that refrigerant flow
restriction caused by said filter is minimized.;

(b) disconnecting the suction hose assembly from the compressor inlet
suction port;

(c) connecting the first side of the filter plate to the compressor inlet
suction port such that the first passage is in fluid communication with the compressor
5 suction port;

(d) connecting the second side of the filter plate to the suction hose
assembly such that the first passage is in fluid communication with the suction hose
assembly, wherein the compressor suction port is in fluid communication with the
suction hose assembly through the first passage and the filter positioned across the
10 first passage; and

(e) flowing refrigerant through the first passage and the filter.

19. The method of claim 18, wherein said mesh portion comprising a metal mesh
screen and said engagement portion comprising an engagement ring, wherein said
engagement ring receives and retains said metal mesh screen.

15 20. The method of claim 18, wherein said filter comprising a cup screen filter, said
cup screen filter further comprising a cone shaped screen, said cone shaped screen
having a base comprising said filter inner diameter and conical sides comprising
said metal mesh screen, wherein said filter is oriented such that refrigerant flow is
directed into the cone.